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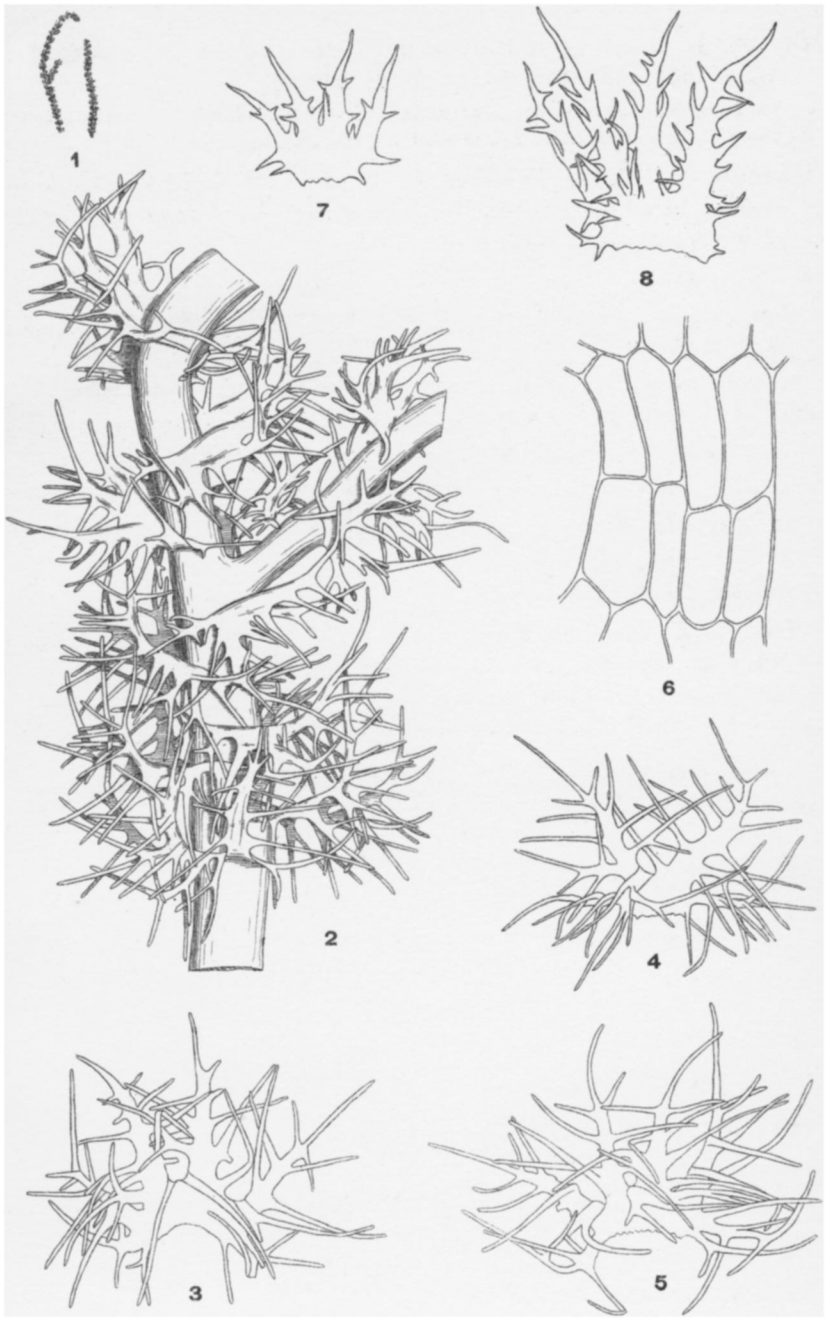
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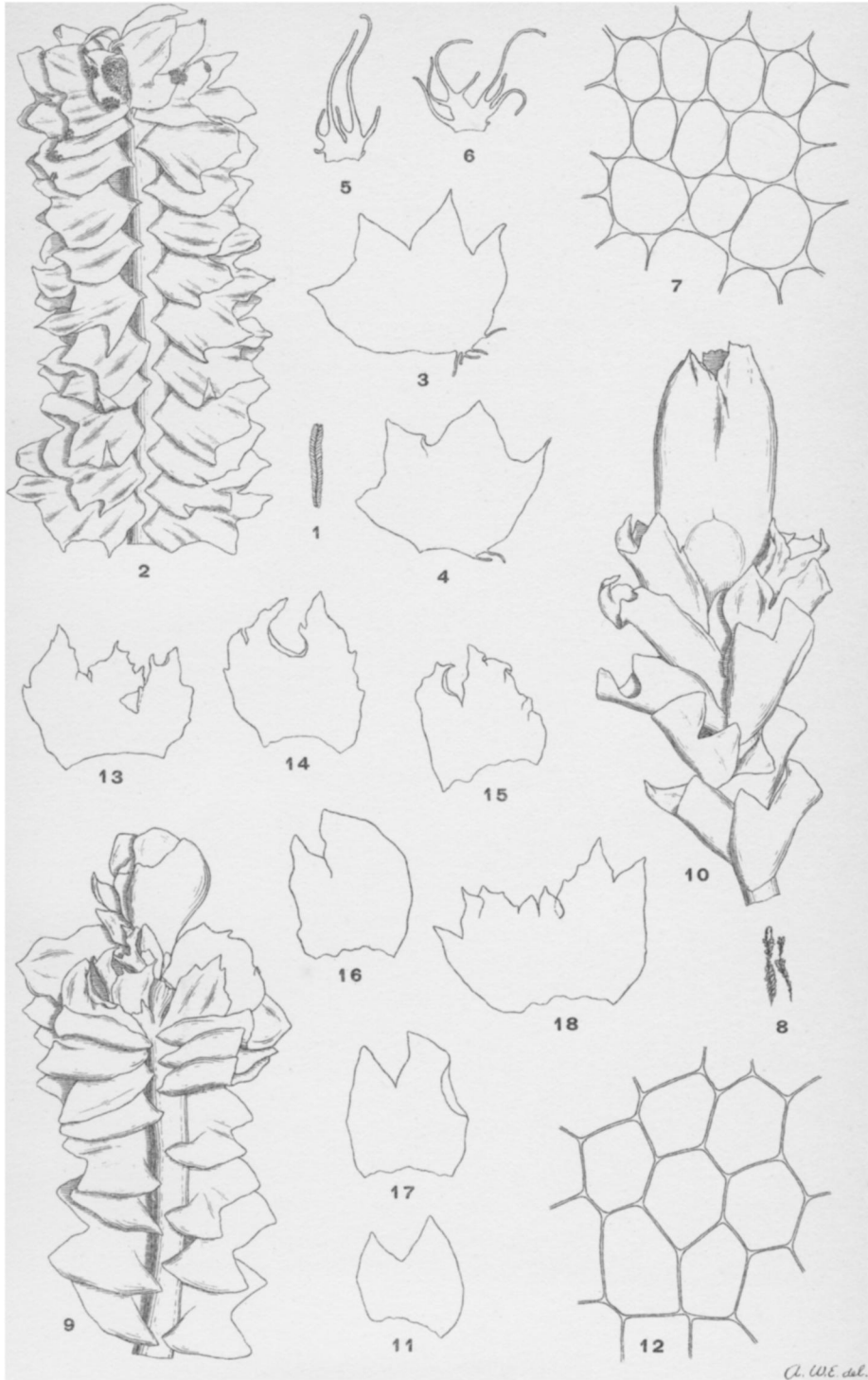
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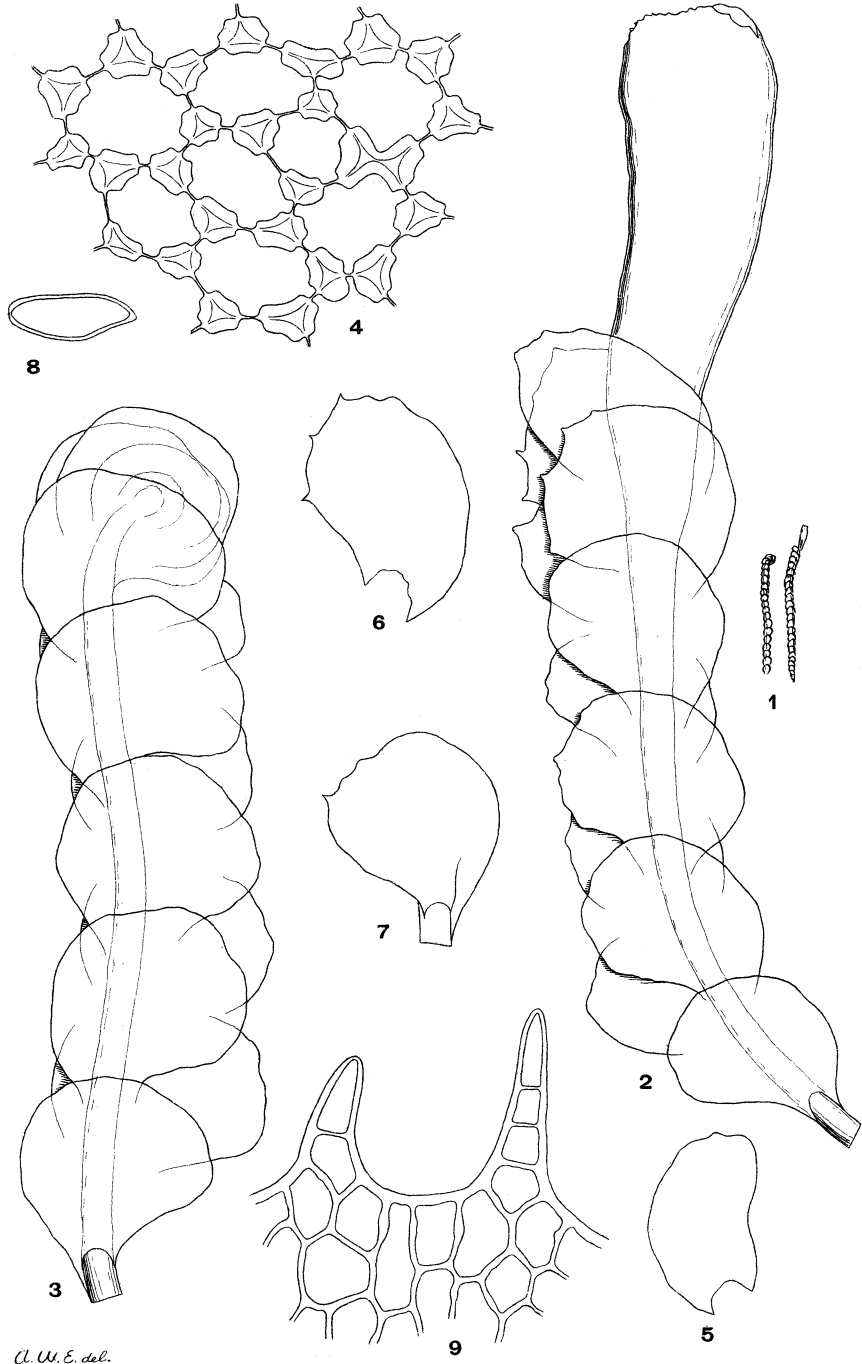


U. W. S. det.

1-6. BLEPHAROSTOMA PILOSUM Evans.
7, 8. BLEPHAROSTOMA QUADRIPARTITUM (Hook.) Trevis.

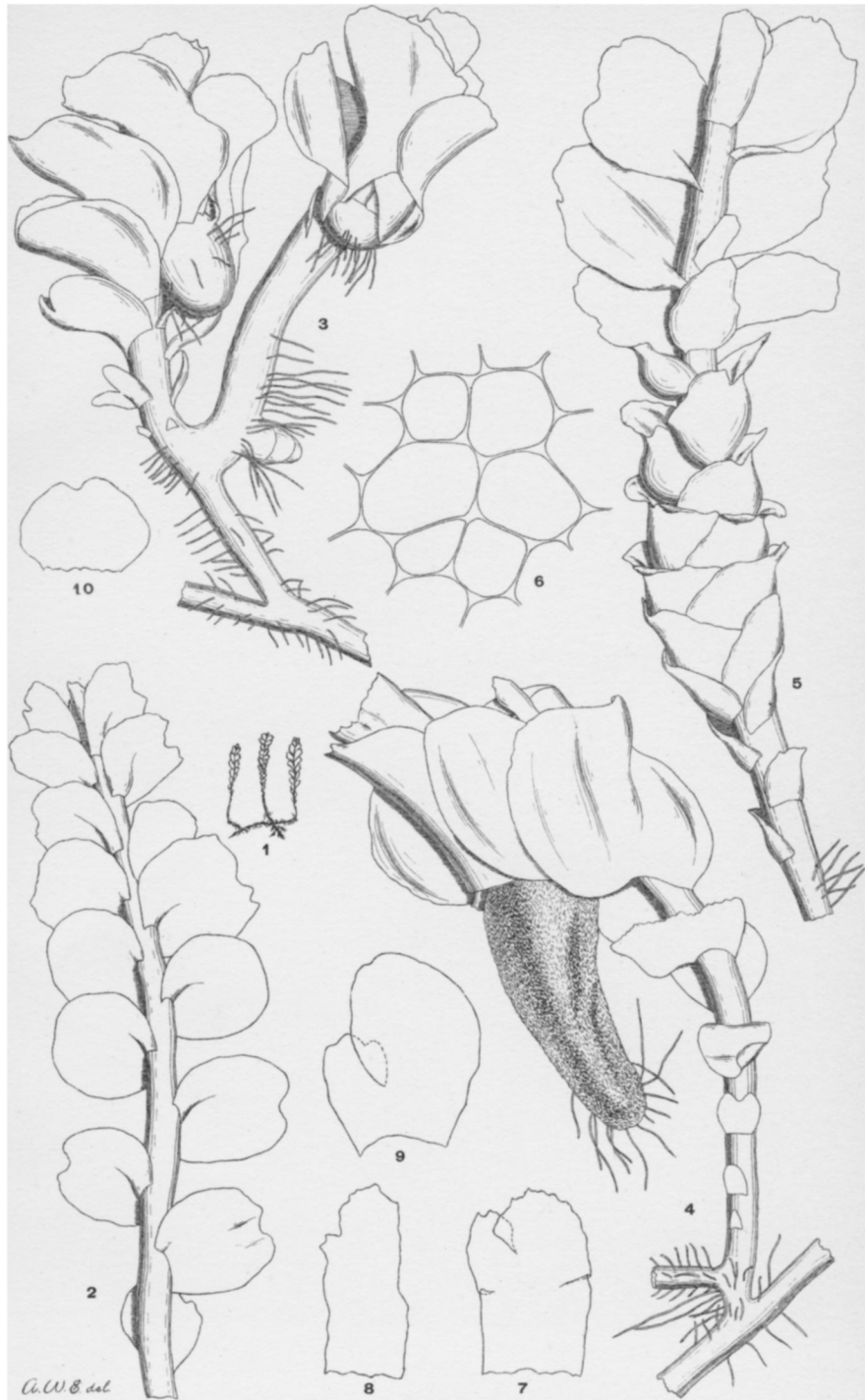


1-7. *JUNGERMANNIA HATCHERI* Evans.
8-18. *JUNGERMANNIA PROPAGULIFERA* Gottsche.



Cl. W. E. del.

PLAGIOCHILA ANSATA Hook. f. and Tayl.



TYLIMANTHUS ANDERSSONII (Ångstr.) Evans.

BULLETIN
OF THE
TORREY BOTANICAL CLUB

AUGUST 1898

An Enumeration of the Hepaticae Collected by John B. Hatcher in
Southern Patagonia.

BY ALEXANDER W. EVANS.

(PLATES 345-348.)

The territory of Patagonia, and particularly the regions neighboring the Straits of Magellan, have several times been visited by scientific expeditions. Most of these have made collections of Patagonian plants and have included the hepaticae among them, either incidentally or systematically. Our knowledge of the hepatic flora of this remote country is, therefore, sufficient to give us some idea of its exceeding richness and variety. Although a few of the most conspicuous species were gathered in the first years of the present century and even earlier, the real foundations of our knowledge are based on the collections made during the Antarctic voyage of the British ships *Erebus* and *Terror*, in the years 1839-43. These important collections were studied by Sir Joseph D. Hooker and Dr. Thomas Taylor, and their preliminary account* of the species found was later amplified into a fuller description† accompanied by numerous colored figures.

Passing over several smaller gatherings attention may further be called to three larger collections, which have been made and described within recent years. The first of these collections was that of Dr. Spegazzini, which was made in 1882 and included 103 species, most of which came from Fuegia. The determinations

* Hepaticae Antarcticae; being characters and brief descriptions of the Hepaticae discovered in the southern circumpolar regions during the voyage of H. M. Discovery Ships *Erebus* and *Terror*. Lond. Jour. of Bot. 3: 366-400, 454-481. 1844.

† Flora Antarctica, 2: 423-446. *pl.* 156-161. 1847.

[Issued 13 August.]

were by Prof. Massalongo, of Ferrara, who published an illustrated account* of the species collected, describing 27 as new. The second collection was made under the direction of the French "Mission Scientifique du Cap Horn," and was studied by M. Bescherelle, of Paris, and Prof. Massalongo. A preliminary paper† by these writers described the new species and varieties, and their memoir,‡ published a little later, gave a complete enumeration of the plants in the collection with illustrations of many interesting forms. In their list, which includes a number of species found by Dr. Saviatier on the western coast of Patagonia, we find 88 species, of which 12 are considered new. The third collection was made by Dr. Naumann during the voyage of the German ship, the *Gazelle*.

Although collected in the years 1875 and 1876, the account of these hepaticae was not published until 1890. They were first studied by Dr. Gottsche, of Altona, who made drawings of the various species collected. He also began but did not finish the work of description, and his notes were afterwards revised and completed by Dr. Schiffner, of Prague, who made use of many of Gottsche's figures in the published account§ of the collection. 69 species from the Straits of Magellan are included in this enumeration, and, of these, 16 are described as new.

The present report is based on a collection made by Dr. John B. Hatcher in the years 1896 and 1897, while engaged in geological field work for Princeton University. Nearly all the plants were found either at Lapotaia on the southern coast of Fuegia or at Villarina Bay, about a day's journey to the westward of Lapotaia, both stations being situated on the Beagle Channel. A very few species came from the Cordilleras of Patagonia. The collection, which numbers 53 species, includes few novelties, but is of interest in adding to our knowledge of certain rare and incompletely known forms.

* *Epatiche della Terra del Fuoco raccolte nell'anno 1882 dal Dott. C. Spegazzini. Nuovo Giorn. Bot. Ital.* 17 : 201-277. *pl.* 12-28. 1885.

† *Hepaticae novae americanae-australes. Bull. de la Soc. Linn.* 626-632, 637-640. 1886.

‡ *Hépatiques récoltées par la Mission française du Cap Horn au 1882 et 1883. Comptes rendus de la Mission Scientifique du Cap Horn*, 5 : 201-252. *pl.* 1-5. 1889.

§ *Lebermoose (Hepaticae) gesammelt auf der Reise S. M. S. Gazelle vorzüglich in der Magellan-Strasse, auf der Malayischen Inseln und Kerguelen-Land*, 1-48. *pl.* 1-8. 1890.

In the preparation of this paper I am especially indebted to Dr. B. L. Robinson for allowing me access to the Taylor Herbarium, to Herr Stephani for helpful notes, drawings and specimens, and to Prof. Nathorst for the loan of two of Ångström's types. Other correspondents who have given me assistance will be mentioned under particular species.

1. ADELOCOLEA UNCIFORMIS (Hook f. & Tayl.).

Jungermannia unciformis Hook. f. & Tayl. Lond. Jour. Bot. **3**: 457. 1844.

Plagiochila unciformis Hook. f. & Tayl. in G. L. & N. Syn. Hep. 653. 1847.

Adelanthus unciformis Spruce, Jour. Bot. **5**: 200. 1876.

Plagiochila sphenoloba Hook. f. & Tayl. in G. L. & N. Syn. Hep. 653. 1847.

Jungermannia halimifolia De Not. Mem. Acc. Tor. II., **16**: 217. f. 5. 1857.

Adelanthus Lindenbergerianus (Lehm.) Mitt. Jour. Linn. Soc. **7**: 244. 1864.

Lapotaia.

As Mitten* has already pointed out, there is a genus *Adelanthus* older than his own. It is the *Adelanthus* of Endlicher, which is now regarded as a synonym of *Pyrenacantha* Wight. Mitten suggests that the name "*Adelocolea*" be substituted for his *Adelanthus* but makes the change in only one species, viz., *Adelocolea decipiens* (Hook.) Mitt.

2. ANDROCRYPHIA PORPHYRRHIZA Nees in G. L. & N. Syn.

Hep. 470. 1846.

Jungermannia porphyrorrhiza Nees in Mart. Fl. Bras. **1**: 343. 1833.

Noteroclada porphyrorrhiza Mitt. Bot. of Kerguelen Island: Transit of Venus Exped. 37. 1874.

Jungermannia confluens Hook. f. & Tayl., Lond. Journ. Bot. **3**: 478. 1844.

Androcryphia confluens Nees in G. L. & N. Syn. Hep. 471. 1846.

* Challenger Exped., Bot. **1**: 106. 1884.

Villarina Bay.

In Hooker and Taylor's *Hepaticae Antarcticae*, the authors did not divide the old genus *Jungermannia* into distinct genera, but simply into subgenera and the name *Noteroclada* was given to one of these. Two years afterwards, in the *Synopsis Hepaticarum*, Nees von Esenbeck raised the group to generic rank, but, instead of retaining for it the name *Noteroclada*, substituted the name *Androcryphia*. The latter, therefore, is the oldest for the group as a genus and ought to be retained.

3. ANEURA CALVA Schiffn. & Gottsche, *Lebermoose der Forschungsreise S. M. S. "Gazelle,"* 42. *pl. 8. f. 16.* 1890.
Fuegia.

4. ANEURA CRISPA (Schiffn. & Gottsche) Steph. *Hedwigia* 32 : 137.
1893.

Pseudoneura crispa Schiffn. & Gottsche, *Lebermoose der Forschungsreise S. M. S. "Gazelle,"* 41. *pl. 8. f. 14, 15.* 1890.

Fuegia.

The specimens agree with a part of the type-material, kindly sent me by Professor Schiffner.

5. ANEURA FUEGIENSIS (Massal.) Evans, *Contr. U. S. Nat. Herb.* 1 : 142. 1892.

Riccardia Fuegiensis Massal. *Nuovo Gior. Bot. Ital.* 17 : 255. *pl. 26. f. 34.* 1885.

Lapotaia.

6. ANEURA PREHENSILIS (Hook. f. & Tayl.). Not Mitt. in Hook. f. *Handb. N. Zeal. Fl.* 543. 1867.

Jungermannia prehensilis Hook. f. & Tayl. *Lond. Jour. Bot.* 3 : 480. 1844.

Metzgeria prehensilis Hook. f. & Tayl. in G. L. & N. *Syn. Hep.* 505. 1846.

Acrostolia prehensilis Trevis. *Mem. reale Ist. Lomb. di Sci. e Lett.* III. 4 : 431. 1877.

Riccardia prehensilis Massal. *Nuovo Gior. Bot. Ital.* 17 : 255. 1885.

Aneura Savatieri Steph. *Hedwigia* 32 : 26. 1893.

Villarina Bay.

There has been so much confusion regarding this characteristic plant of southern Patagonia that it seems wise to give a brief review of the literature concerning it and to emphasize again its most important peculiarities. The original description of *Jungermannia prehensilis* (like all in Hooker and Taylor's paper) consists of two parts—a diagnosis in Latin, and a somewhat fuller account in English with comparative remarks. In the Synopsis Hepaticarum we find the diagnosis simply repeated and the English account translated into Latin, so that this description contains nothing new and is essentially like the original. In the Flora Antarctica again, what is practically the same description reappears but this time is supplemented by a figure of the plant with slightly enlarged details. This original description is, of course, incomplete and the part which applies to the vegetative characters of the plant, particularly so. The following extracts include all the points brought forward about the thallus: "Fronde laxe caespitosa erecta incurva alata; lobis alternis secundis pinnatis, pinnulis planis linearibus crassiusculis;" "Frondes loosely tufted, with broad hooked tips, the stem flat, brown, pubescent, the pinnules are smoother and of a pale olive green." The plant is compared with *Jungermannia eriocaula* Hook., which is said to be darker green and to have a tripinnate frond with narrower pinnules. Only one station is given, Hermite Island, Cape Horn, and no others are mentioned either in the Synopsis or in the Flora Antarctica.

In the Flora Novae Zelandiae, Mitten* applies the name *Sarcomitrium prehensile* (changed to *Aneura prehensilis* in the Handbook) to a plant with *smooth* epidermis, and apparently considers it identical with the Fuegian species. With the exception of this character, his description does indeed agree very closely with that of Hooker and Taylor. Massalongo, on the other hand, says of his *Riccardia prehensilis*: "Cellulae superficiales thalli in appendicem mamillaeformem pulcherrime prominent," and Schifferner calls attention to the same peculiarity. Still more recently Stephani, basing his opinion on New Zealand specimens of *Aneura prehensilis* presumably determined by Mitten, describes a Patagonian plant as *Aneura Savatieri* n. sp. and names as his type some of the material referred by Beschereille and Massalongo to

* Op. cit. 2: 167. 1855.

Riccardia prehensilis. His description is very clear, the account of the epidermis being as follows: "Cellulae * * * corticales depresso-imbricatulae, *i. e.*, apex cellulae papulosae supra cellulam proximam parum protractus; margo ubique hyalino subcrenulato." He remarks further: "*Aneura prehensilis* (ex insula N. Zelandia) multo robustior est, epidermide *plano-cellulosa*."

In view of these conflicting opinions, I have consulted Taylor's original specimens of *Jungermannia prehensilis* from Hermite Island. They are remarkably free from admixture and show the peculiar papillose epidermis described above, indicating that the Patagonian plant is to be looked upon as the true *Aneura prehensilis* (Hook. f. & Tayl.). The New Zealand plant with the smooth epidermis is probably an unnamed species.

The papilliform epidermal cells of *Aneura prehensilis* are somewhat variable in their distribution; on some stems they occur on both surfaces, on others, only on the antical surface, while on the pinnules they are scattered and sometimes few in number. A robust rachis is about 15 cells thick, but its cells are unlike those found in most members of the genus; on the outside there are one or two layers of rather thin-walled cells (including the epidermis) and just inside these are two or three layers of cells with very thick brown walls, the thickening being deposited unequally and leaving irregular cell-cavities; the interior is filled with cells having slightly thickened pale walls. These different kinds of cells do not vary markedly in size.

The nearest ally of *Aneura prehensilis* is the more robust *A. eriocaula* of New Zealand. In this species the rachis, as described by Leitgeb,* is essentially like that of the Patagonian plant. The epidermis also shows papilliform cells, but the papillae, instead of being appressed, stand out from the rachis at right angles and give it a hirsute appearance.

7. ANEURA SPEGAZZINIANA (Massal.) Steph. Hedwigia **32**: 138. 1893.

Riccardia Spegazziniana Massal. Nuovo Gior. Bot. Ital. **17**: 254. *pl.* 25. *f.* 32. 1885.
Fuegia.

*Unters. über die Leberm. 3: 49. 1877.

8. ANTHOCEROS ENDIVIAEFOLIUS Mont. Voy. au Pôle Sud. Bot. Crypt. **1**: 211. 1845.

Lapotaia.

The plants referred to this species agree closely with the detailed description of Massalongo* as well as with the more meager original description of Montagne. In the Taylor Herbarium, there is an *Anthoceros* from Cape Horn, labeled *A. punctatus* which belongs here, and, judging from the description, *A. Jamesonii* Tayl.† is also to be considered a synonym.

9. BLEPHARIDOPHYLLUM DENSIFOLIUM (Hook.) Ångstr. Öfversigt af Kongl. Vetensk.-Akad. Förhand. **29**, Häft 5: 151. 1874.

Jungermannia densifolia Hook. Musc. Exot. pl. 36. 1818.

Scapania densifolia Nees in G. L. & N. Syn. Hep. 72. 1844.

Diplophyllum densifolium Mitt. Jour. Linn. Soc. **15**: 69. 1875.

Martinellia densifolia Trev. Mem. reale Ist. Lomb. di Sci. e Lett. III. **4**: 411. 1877.

Villarina Bay.

A very variable species, including *Jungermannia vertebralis* Hook. f. & Tayl., *J. chloroleuca* Hook. f. & Tayl. and *J. pycnophylla* De Not.

10. BLEPHAROSTOMA PILOSUM sp. nov.

Sterile: densely caespitose, brownish-green; stems erect, simple or with a few lateral branches, sparingly or not at all radiculose, the rhizoids, when present, coming from the basal cells of the underleaves; leaves and underleaves similar, transversely inserted, concave, broadly orbicular-quadrate in general outline, deeply 4-parted (about $\frac{4}{5}$), the segments lanceolate, 4–7 cells wide at base, tapering into capillary points (each composed of a single row of 5 or more cells), and bearing on their margins 5–8 pairs of opposite widely divaricate capillary teeth, becoming successively longer toward the base; upper teeth composed of a single row of cells, lower teeth strongly deflexed, often 2 cells wide in the lower part and giving off a pair or two of tertiary teeth, the external basal teeth of the outer segments much larger than the others and making the leaves appear 6-parted; undivided basal part of the leaves about 4 cells across: leaves subtending branches similar to

* Nuovo Gior. Bot. Ital. **17**: 258. 1885.

† Fl. N. Zeal. **2**: 171. 1855.

the others but only 2-parted (though often apparently 4-parted from the large size of the external basal teeth of the segments) : leaf-cells oblong, rather thick-walled but without trigones ; cuticle often indistinctly and minutely verruculose-striate, especially toward the base of the leaves.

Stems 1–2 cm. long, 0.2 mm. wide ; leaves 0.85 mm. long and wide, leaf-cells averaging 46μ long, 14μ wide. [Plate 345, figs. 1–6.]

Villarina Bay.

The leaves of the present species are so copiously and finely dissected that the plant reminds one at first glance of a *Trichocolea*, but the scanty branching, the dark color and the occasional rhizoids would seem to remove it from that genus. The somewhat problematical *T. polyacantha* (Hook. f. & Tayl.) from New Zealand might, nevertheless, seem from the published descriptions and figures* to be identical with our species, but a study of the type material in the Taylor Herbarium shows conclusively that this curious plant is distinct not only from *Blepharostoma pilosum* but also from *B. quadripartitum* (Hook.) Trevis., of which Schiffer† has considered it a possible synonym. The New Zealand species is distinguished at once by the numerous paraphylla which clothe the stem and give it a hirsute appearance ; they are minute structures, composed of only 2–4 cells and are either simple or forked, their cells, like those of the leaves, being minutely verruculose. Whether the plant is really a *Trichocolea* or not can hardly be settled without a larger supply of material, as the true nature of the involucre cannot be made out without dissection.

In the remarks which supplement Mr. Pearson's description of *Blepharostoma palmatum* Lindb.,‡ a statement is made which would seem to indicate that *B. pilosum* (or some closely allied plant) has sometimes been included under *B. quadripartitum*. The specimens listed below agree closely with authentic specimens of this latter species in the Taylor Herbarium and also with a drawing in the Sullivant collection made from material collected on the Wilkes Expedition. The main differences between the two are the following : *B. quadripartitum* is smaller than *B. pilosum*, and its

* Lond. Jour. Bot. 3 : 290. 1844. Fl. Ant. 1 : 161. pl. 65. f. 9. 1844.

† Lebermoose der Forschungsreise S. M. S. "Gazelle," 19. 1890.

‡ Jour. Bot. 25 : 193–195. pl. 275. 1887.

smaller leaves are less deeply parted (about $\frac{2}{3}$), the undivided basal part being about 6 cells across; the leaf-cells are shorter; the leaf-segments are either entire (on slender branches) or sparingly toothed, there being only 1-3 pairs of teeth for each segment, except on the leaf-margins, where there may be 1 or 2 extra ones; the teeth are always short and simple; even on the bracts, where the teeth of the segments are often 6-8 in number on each side, they remain short, rarely being more than 3 or 4 cells in length.

11. BLEPHAROSTOMA QUADRIPARTITUM (Hook.) Trevis. Mem. reale Ist. Lomb. di Sci. e Lett. III. 4: 417. 1877. [Plate 345, figs. 7, 8.]

Jungermannia quadripartita Hook. Musc. Exot. pl. 117. 1820.

Temnomia quadripartita Mitt. Jour. Linn. Soc. 15: 68. 1877.

Jungermannia podophylla Ångstr. Öfversigt af Kongl. Vetensk.-Akad. Förhand. 29, Häft 4: 11. 1872 (*vide* Pearson).

Fuegia.

12. CHILOSCYPHUS MASSALONGOANUS Steph. Hedwigia, 32: 325: 1893.

Chiloscyphus fissistipus Massal. Nuovo Gior. Bot. Ital. 17: 229. pl. 18. f. 16. 1885. (Not Hook. f. & Tayl.).

Chiloscyphus fissistipus var. *Magellanicus* Schiffn. & Gottsche, Lebermoose der Forschungsreise S. M. S. "Gazelle," 14. pl. 2. f. 18. 1890.

Villarina Bay.

13. FOSSOMBRONIA NAUMANII Schiffn. & Gottsche, Lebermoose der Forschungsreise S. M. S. "Gazelle," 39, pl. 7. f. 23-25. 1890.

Fuegia.

The present material is all sterile and can only be referred provisionally to the above species, from which it differs in certain points. Professor Schiffner has kindly compared the Patagonian plant with the type of *F. Naumanii* from Kerguelen Island and writes me the following note in regard to it: "Differt a *F. Naumanii* statura majore, rhizoidis pallidis (nec violaceo-rubris), absentia squamu-

larum dorsalium. Foliorum forma et reticulatione bene congruit. Aequae ac *F. Naumanii* planta aquatica vel imo palustris esse videtur." In the total absence of reproductive organs it seems wisest not to give our plant a new name.

14. *FRULLANIA BOVEANA* Massal. Nuovo Gior. Bot. Ital. **17**:

244. *pl.* 23. *f.* 27. 1885.

Fuegia.

15. *HARIOTIELLA HERMITENSIS* Massal. & Besch. Nuovo Gior. Bot. Ital. **5**: 256. 1898 (new series).

Polyotus? *Hariotianus* Besch. & Massal. Bull. Soc. Linn. de Paris, 639. 1886.

Lepidolaena Hariotiana Schiffn. in Engler & Prantl, Nat. Pfl. Fam. **1**³: 110. 1895.

Lapotaia.

16. *HARPALEJEUNEA SUBFENESTRATA* (Massal.) Schiffn. & Gottsche, Lebermoose der Forschungsreise S. M. S. "Gazelle," 28. *pl.* 6. *f.* 10, 11. 1890.

Lejeunea subfenestrata Massal. Nuovo Gior. Bot. Ital. **17**: 249. *pl.* 25. *f.* 30. 1885.

Villarina Bay.

17. *JAMESONIELLA COLORATA* (Lehm.) Schiffn. in Engler & Prantl, Nat. Pfl. Fam. **1**³: 83. 1893.

Jungermannia colorata Lehm. Linnaea, **4**: 366. 1829.

Villarina Bay.

18. *JUNGERMANNIA ANTARCTICA* Ångstr. Öfversigt. af Kongl. Vetensk. Akad. Förhand. **29**, Häft 4: 10. 1872.

Jungermannia Pigafettoana Massal. Nuovo Gior. Bot. Ital. **17**: 217. *pl.* 14. 1885.

Lapotaia.

Through the kindness of Professor Nathorst, of Stockholm, I have been enabled to examine a part of Ångström's type of this species, which is preserved in the collections of the Royal Academy of Science; the specimens agree in all respects with those collected by Dr. Hatcher and also with the published description and

figures of *Jungermannia Pigafettoana*. The original description of Ångström does not give an accurate account of the underleaves. In the diagnosis of the species, we read: "amphigastria ovato-vel lanceolato-subulatis;" and, in the fuller description which follows, it is stated: "amphigastria caulis inferioris ovato-subulata, utrinque in parte basali et sub subulam dente uno subulato instructa; in parte superiori caulis lanceolato-subulato subintegra sunt." As a matter of fact, the underleaves are deeply 2-parted, and the description quoted above applies to the divisions and not to the complete structures. Ångström also omits mention of the cuticle of the leaves, which is strongly verrucose, and is one of the most striking peculiarities of the plant.

19. *JUNGERMANNIA HATCHERI* sp. nov.

Jungermannia barbata, B. Floerkii Gottsche, Die Lebermoose Süd-Georgiens, 450. pl. 6. 1890. Not *Jungermannia Floerkii* Web. and Mohr.

Sterile: plants loosely caespitose or creeping over tufts of *Lophocolea rigens*, yellowish-brown; stems simple or sparingly branched, densely radiculose; leaves closely imbricated, obliquely inserted, more or less crispate, broadly quadrate; abruptly widening from the base, not decurrent, cleft one-third or more into 4 obtuse, acute or cuspidate lobes, separated by obtuse or lunulate sinuses, postical margin bearing near the base a cluster of 2-5 fine hair-like cilia, each consisting of 2-8 cells, usually in a single row; underleaves divided almost to the base into 2 slender divisions, bearing cilia in the lower part; leaf-cells rather thin-walled with distinct trigones, cuticle smooth or nearly so; gemmae reddish-brown, borne in chains and forming clusters on the teeth of the upper leaves, angular, composed of 1 or 2 cells.

Stems .5-1 cm. long, 0.35 mm. in diameter; leaves 1.55 mm. long, 1.20 mm. wide; underleaves 0.55 mm. long, 0.15 mm. wide; leaf-cells on margin 15 μ , in the middle 19 μ , and at the base 23 μ in diameter; gemmae 15 μ in diameter. [Plate 346, figs. 1-7.]

Lapotaia.

The present species is an antarctic representative of the *barbatae*-group of the genus *Jungermannia*, a group of closely allied plants, which forms a most conspicuous feature of the hepatic floras of northern and arctic regions. The presence of basal cilia on the leaves shows an approach to *J. lycopodioides* and *J. Floerkii*, and to

the latter species the Patagonian plant bears a marked resemblance. The principal points of difference have already been indicated by Gottsche. In *J. Floerkii*, the leaves do not broaden out so abruptly from the base as in *J. Hatcheri*, their lateral margins are more nearly parallel and their more robust basal cilia are often 2 or 3 cells wide in the lower part; the underleaves are much larger and their segments are often 8–10 cells broad at the base instead of only 3 or 4 cells; in *J. Hatcheri*, moreover, the segments end in a single row of 10–20 cells, whereas in *J. Floerkii*, there are usually less than 10 cells. The occasional cuspidate leaf-lobes of *J. Hatcheri* remind one of the similar structures found in *J. lycopodioides*, but this latter species is much more robust, and has longer and more tortuous basal cilia and larger underleaves with broader and more densely ciliated segments.

20. JUNGERMANNIA PROPAGULIFERA Gottsche Die Lebermoose Süd Georgiens, 451, *pl. 1. f. 6–12*. 1890. [Plate 346, figs. 8–18.]

Paroicus: plants caespitose, mixed with the preceding species, yellowish-brown or reddish; stems creeping or ascending, branching by innovations, radiculose: leaves imbricated, ovate-quadrate, obliquely spreading, not decurrent, concave, bifid about one third with subacute sinus and lobes, the antical lobe slightly smaller, otherwise entire (or erose-denticulate from the presence of gemmae); underleaves wanting; leaf-cells polygonal in outline, thin-walled and without trigones; ♀ inflorescence terminal; bracts in 1 or 2 pairs, mostly erect-spreading, similar to the stem-leaves but more crispate, sometimes trifid and with sparingly and irregularly toothed lobes and margins; bracteole connate on one or both sides, with bracts ovate, bilobed or not segmented, toothed or entire; perianth ovate-cylindrical, composed of a single layer of cells, slightly narrowed and plicate in the upper part, minutely denticulate at the mouth: ♂ bracts in 2–4 pairs, situated just below the ♀ bracts, complicate-bilobed, but similar to the stem-leaves when spread out, scarcely inflated at the base and enclosing 1 or 2 antheridia; gemmae borne on the leaves near the apices of the lobes, yellowish-brown, oblong, composed of 1 or 2 cells: capsule spherical, purple, borne on a long hyaline stalk; spores yellowish-brown, minutely tuberculate; elaters reddish, bispiral.

Stems .5–1 cm. long, 0.22 mm. in diameter; leaves 0.95 mm. long and wide; leaf-cells 28 μ in diameter at base, 22 μ in other parts of the leaf; bracts 1.2–1.35 mm. long, 0.85–1.2 mm. wide, bracteole 1.0–1.1 mm. long, 0.5 mm. wide, perianth 2.9 mm. long,

1.1 mm. in diameter; gemmae $20\ \mu$ in diameter; spores 12–14 μ in diameter.

Lapotaia.

In his description of *Jungermannia propagulifera*, Gottsche calls attention to the peculiarities of the perigonal bracts and the gemmiparous stems, but says that the perichaetial bracts with the female flowers are still to be desired, thereby implying that the species is dioicous. In other respects the description agrees very closely with the plants collected by Dr. Hatcher, and it seems best to refer the latter's specimens, provisionally at any rate, to Gottsche's species. Curiously enough, both the South Georgian and the Fuegian specimens were found growing with *Jungermannia Hatcheri*. *J. propagulifera* is nearly allied to the European *J. socia* Nees, which certain authors* consider a variety of *J. excisa* Dicks. It resembles this species in its paroicous inflorescence, in its absence of underleaves, etc. In the European species, however, the leaves are less deeply bifid, so that the sinus is obtuse or lunulate, the leaf-cells have thicker walls and there are slight differences in the bracts.

21. LEJEUNEA SAVATIERIANA Besch. & Massal. Bull. Soc. Linn. de Paris, 638. 1886.

Harpalejeunea Savatieriana Schiffn. & Gottsche, Lebermoose der Forschungsreise S. M. S. "Gazelle," 29. pl. 6. f. 7. 1890.
Villarina Bay.

22. LEPICOLEA OCHROLEUCA (Spreng.) Lindb. Acta Soc. Sci. Fenn. 10: 516. 1875.

Jungermannia ochroleuca Spreng. Syst. Veg. 4: 325. 1829.
Sendtnera ochroleuca Nees in G. L. & N. Syn. Hep. 240. 1845.
Leperoma ochroleuca Mitt. in Hook. f. Handb. of the N. Zeal. Fl. 754. 1867.
Herberta ochroleuca Trevis. Mem. reale Ist. Lomb. di Sci. e Lett. III. 4: 397. 1877.
Villarina Bay, etc.

* Cf. Massalongo, Atti della Soc. Veneto-Trent. di Sc. Nat. II. 2:(19). 1895.

23. LEPIDOLAENA MAGELLANICA (Lam.) Lindb. Jour. Linn. Soc.
13: 194. 1873.

Jungermannia Magellanica Lam. Encycl. Bot. 3: 284.

Polyotus Magellanicus Gottsche in G. L. & N. Syn. Hep. 248.
1845.

Gackströmia Magellanica Trevis. Mem. reale Ist. Lomb. di Sci.
e Lett. III. 4: 397. 1877.

Fuegia.

24. LEPIDOLAENA MENZIESII (Hook.) Dumort. Recueil d'obs. sur
les Jung. 13. 1835.

Jungermannia Menziesii Hook. Musc. Exot. pl. 118. 1820.

Polyotus Menziesii Gottsche in G. L. & N. Syn. Hep. 247.
1845.

Fuegia.

25. LEPIDOZIA FILAMENTOSA Lehm. & Lindenb. in G. L. & N.
Syn. Hep. 207. 1845.

Jungermannia filamentosa Lehm. & Lindenb. in Lehm. Pugil-
lus, 4: 29. 1832.

Mastigophora filamentosa Trevis. Mem. reale Ist. Lomb. di Sci.
e Lett. III. 4: 416. 1877.

Villarina Bay.

26. LEPIDOZIA PLUMULOSA Lehm. & Lindenb. in G. L. & N.
Syn. Hep. 211. 1845.

Jungermannia plumulosa Lehm. & Lindenb. in Lehm. Pu-
gillus, 6: 30. 1834.

Mastigophora plumulosa Trevis. Mem. reale Ist. Lomb. di Sci.
e Lett. III. 4: 416. 1877.

Lepidozia tetradactyla Tayl. in G. L. & N. Syn. Hep. 213.
1845.

Jungermannia tetradactyla Hook. f. & Tayl. Lond. Jour. Bot.
3: 306. 1844.

Fuegia.

27. LEPIDOZIA TRUNCATELLA Nees in G. L. & N. Syn. Hep.
209. 1845.

Mastigophora truncatella Trevis. Mem. reale Ist. Lomb. di Sci.
e Lett. III. 4: 416. 1877.

Fuegia.

28. LOPHOCOLEA BIDENTATA (L.) Dumort. Recueil d'obs. sur les
Jung. 17. 1835.

Lapotaia.

29. LOPHOCOLEA STENOPHYLLA Schiffn. & Gottsche, Lebermoose
der Forschungsreise S. M. S. Gazelle, 12. *pl.* 3. *f.* 25-28. 1890.
Villarina Bay.

30. LOPHOCOLEA HORIZONTALIS (Hook.).

Jungermannia horizontalis Hook. Musc. Exot. *pl.* 96. 1818.

Chiloscyphus horizontalis Nees in G. L. & N. Syn. Hep. 177.
1845.

Jungermannia grandifolia Hook. f. & Tayl. Lond. Jour. Bot.
3: 474. 1844.

Chiloscyphus grandifolius Tayl. in G. L. & N. Syn. Hep. 185.
1845.

Villarina Bay.

31. LOPHOCOLEA LENTA (Hook. f. & Tayl.) Tayl. in G. L. &
N. Syn. Hep. 162. 1845.

Jungermannia lenta Hook. f. & Tayl. Lond. Jour. Bot. 3:
379. 1844.

Jungermannia diademata Hook. f. & Tayl. *l. c.* 3: 560. 1844.

Jungermannia secundifolia Hook. f. & Tayl. *l. c.* 3: 471.
1844.

Lapotaia.

32. LOPHOCOLEA OBVOLUTA (Hook. f. & Tayl.).

Jungermannia obvoluta Hook. f. & Tayl. Lond. Jour. Bot.
4: 80. 1845.

Fuegia.

In the original description of this species no station is given except the Falkland Islands. In the Flora Antarctica, Hermite Island, Cape Horn, is also mentioned. Under the name *Jungermannia obvoluta*, two plants are preserved in the Taylor herbarium; the first of these from the Falkland Islands, must be considered the type of the species; the second from Cape Horn, is appar-

ently distinct, but there is so little of it that it would be unwise to attempt to describe it. In the type-specimen a well-developed leaf is almost longitudinally inserted and is attached by a very broad base, the distance from side to side being about twice as great as that from base to apex. The leaf is more or less distinctly divided into two unequal lobes; the postical, which is slightly the larger, is concave and rounded at the base and extends beyond the stem, at the apex it is bidentate but is otherwise entire; the antical lobe is decurrent and is irregularly lobed and dentate. The leaf-cells average $25\ \mu$ in diameter. The specimens collected on the Albatross expedition and referred by the writer to *L. abvolutaeformis** agree closely with this type. In Dr. Hatcher's specimens the postical lobe is more coarsely and irregularly dentate than in the type and the leaf-cells are a little smaller, averaging $21\ \mu$ in diameter, but the plants are otherwise so similar that they can hardly be separated. It is probable that *Lophocolea obvolutaeformis* (De Not.) Massal. also belongs here, although the published descriptions† of this species differ from Taylor's specimen in a few minor details. The figure of *L. obvoluta* in the Flora Antarctica does not well represent the species.

33. LOPHOCOLEA PALLIDE-VIRENS (Hook f. & Tayl.) Mitt. Jour. Linn. Soc. **15**: 72. 1877.

Jungermannia pallide-virens Hook f. & Tayl. Lond. Jour. Bot. **3**: 473. 1844.

Chiloscyphus pallide-virens Tayl. in G. L. & N. Syn. Hep. 179. 1845.

Villarina Bay.

34. LOPHOCOLEA PUCCIOANA (De Not.) Massal. var. SUSPECTA Massal. Nuovo Gior. Bot. Ital. **17**: 228. *pl.* 17. *f.* 1-9. 1885.
Villarina Bay.

Prof. Massalongo has kindly confirmed my determination of these specimens. In the Sullivant collection there is a drawing labeled "*Jungermannia humilis*" which was made from specimens collected

* Contr. U. S. Nat. Herb. **1**: 140. 1892.

† Mem. Acc. Tor. II. **16**: 220. *f.* 8, 1855. Nuovo Gior. Bot. Ital. **17**: 223. 1885.

by the Wilkes Expedition. The drawing represents a plant which is identical with Dr. Hatcher's specimens. As, however, *Jungermannia humilis* Hook. f. & Tayl.* seems to have been a composite species and as Mitten† has applied the name to a plant without underleaves, it seems wisest not to change the name of De Notaris' plant. *Jungermannia humilis* is apparently not represented in the Taylor herbarium.

35. LOPHOCOLEA RIGENS (Hook. f. & Tayl.).

Jungermannia rigens Hook. f. & Tayl. Lond. Jour. Bot. 3: 461. 1844.

Dioicous: densely caespitose, yellowish-green; stems ascending and giving off numerous simple or subdivided, ascending or erect, lateral branches, sparingly radiculose, the radicles in clusters at the bases of the underleaves: leaves imbricated, obliquely inserted, erect-spreading, strongly concave or convolute (especially on the branches), broadly ovate or orbicular, bifid about one-fourth with acute, obtuse or lunulate sinus and acute teeth, otherwise entire, more or less decurrent at antical base: underleaves ovate, bifid one-third or more with narrow sharp lobes, usually bearing on each side a small tooth at about the middle, otherwise entire: leaf-cells polygonal, thin-walled, slightly or not at all thickened at the angles: ♀ inflorescence terminal, sometimes innovating, bracts in 2 or 3 pairs, less obliquely inserted and slightly larger than the leaves but scarcely different from them in shape; bracteole ovate, bifid about one-third and bearing a small tooth on each side above the middle; perianth (young) campanulate, 3-keeled but without wings, 3-lobed at the wide, open mouth and coarsely and irregularly toothed: ♂ inflorescence borne in the course of a branch, bracts in several (about 5) pairs, imbricated and convolute, similar in shape to the stem-leaves when spread out but expanding at the antical base into an inflated pouch usually tipped with a tooth; underleaves not modified.

Stems .5–1 cm. long, 0.2 mm. in diameter; leaves (large) 0.75 mm. long and wide; underleaves (large) 0.35 mm. long, 0.3 mm. wide; leaf-cells at edge of leaf 16 μ , in middle 21 μ and at base 25 μ in diameter; perichaetial bracts 1 mm. long, 0.85 mm. wide, bracteole 0.95 mm. long, 0.7 mm. wide; perigonal bracts 0.7 mm. long, 0.5 mm. wide.

Lapotaia.

* Lond. Jour. Bot. 3: 468. 1844.

† Botany of Kerguelen Island: Transit of Venus Expedition, 34. 1874.

This distinct little *Lophocolea* does not seem to have been recorded since its original discovery in the Falkland Islands. Dr. Hatcher's specimens agree very closely with the sterile type material in the Taylor herbarium, and I have given a full account of the species because the original description is far from complete and the figure given in the Flora Antarctica does not adequately represent the plant. Fruiting stems seem to be very rare, the plant apparently spreading by means of small branches, which, when dry, easily become detached.

The authors of *Jungermannia rigens* compared it with the European *J. Francisci* Hook. and, in the Synopsis, it is placed close to that species; the position of the branches, however, which are produced near the postical basal angle of the subtending leaves would at once remove it from the genus *Cephalozia* in which *J. Francisci* is now included. *L. rigens* belongs in the puzzling group of *Lophocoleae* with bifid leaves. Its small size and yellowish-green color, the curious rolling up of its leaves, which often gives the branches a worm-like appearance and the slight modifications which its bracts undergo will serve to distinguish it.

36. *LOPHOCOLEA VASCULOSA* (Hook. f. & Tayl.) Nees in G. L. & N. Syn. Hep. 702. 1847.

Jungermannia vasculosa Hook. f. & Tayl. Lond. Jour. Bot. 3: 461. 1844.

Jungermannia elata Gottsche, Die Lebermoose Süd-Georgiens, 450. pl. 7. f. 3-6. 1890.

On trees, Cordilleras of Patagonia.

The figures of this species in the Flora Antarctica give a false idea of the underleaves, which are much narrower than is represented. The quoted illustration of *Jungermannia elata*, however, is more accurate in this respect. The Patagonian plants agree closely with the types of *J. vasculosa* in the Taylor Herbarium.

37. *MARCHANTIA POLYMORPHA* L. Sp. Pl. 1137. 1753.

Cordilleras of Patagonia: Fuegia.

Although the species of *Marchantia* which were collected during the Antarctic voyage were identified by Hooker and Taylor as *M. polymorpha*, they were afterwards referred by Mitten to *M.*

tabularis Nees.* I had hoped to find the latter species in the present collection, but a study of numerous specimens and a comparison with an authentic African plant of *M. tabularis*,† kindly sent me by Herr Stephani, have shown conclusively that Dr. Hatcher's material of this genus is all referable to *M. polymorpha*.

38. MARSUPIDIUM CRYSTALLINUM (Massal.) Besch. & Massal.

Compt. rend. de la Miss. Sc. du Cap Horn, 5: 229. 1889.

Gymnanthe crystallina Massal. Nuovo Gior. Bot. Ital. 17

239. pl. 22. f. 24. 1885.

Acrobolbus excisus Schiffn. in Engler & Prantl, Nat. Pfl. Fam. 1³: 86. 1893.

Fuegia.

The material of this species is all sterile, and is present in small amount. My determination has been kindly verified by Prof. Massalongo. It is doubtful if the plant can be retained in *Marsupidium*, as we now understand that genus.

39. MARSUPIDIUM URVILLEANUM (Mont.) Mitt. in Hook. f. Handb.

N. Zeal. Fl. 754. 1867.

Plagiochila Urvilleana Mont. Ann. des Sc. Nat. II. 19: 247. 1843.

Scapania Urvilleana Mont. in G. L. & N. Syn. Hep. 63. 1844.

Jungermannia Urvilleana Hook. f. & Tayl. Lond. Jour. Bot. 3: 468. 1844.

Gymnanthe Urvilleana Tayl. in G. L. & N. Syn. Hep. 193. 1845.

Acrobolbus Urvilleanus Trevis. Mem. reale Ist. Lomb. di Sci. e Lett. III. 4: 423. 1877.

Jungermannia abbreviata Hook. f. & Tayl. Lond. Jour. Bot. 3: 374. 1844.

Plagiochila abbreviata Tayl. in G. L. & N. Syn. Hep. 646. 1847.

Fuegia.

* Hook. f. Handb. N. Zeal. Fl. 545. 1867.

† According to Schiffner (Oesterr. botan. Zeitschrift. 1896), *Marchantia tabularis* Nees is a synonym of the older *M. Berteroana* Lehm. & Lindenb.

40. METZGERIA FRONTIPILIS Lindb. Acta Soc. pro Faun. et Flor.
Fenn. **1**: 14. f. 2. 1877.

Fuegia.

41. MYLIA ABDITA (Sulliv.).

Plagiochila abdita Sulliv. in Hook. Jour. Bot. and Kew Gard.
Misc. **2**: 317. 1850.

Leioscyphus pallens Mitt. Jour. Linn. Soc. **15**: 68. 1877.

Lapotaia.

The type of *Plagiochila abdita* is not to be found at present in the Sullivant Herbarium, but there is a drawing of the species there, which agrees very closely with the Lapotaia specimens and also with the published descriptions and figures* of *Leioscyphus pallens*. The two genera, *Mylia* and *Leioscyphus* (or *Leptoscyphus*), are both given places by Schiffner† in his recent treatment of the genera of Hepaticae. He recognizes, however, that they are very close to each other and points out only two, purely vegetative, characters to distinguish them: in *Mylia* the leaves are said to be *alternate* and the underleaves *undivided*; whereas in *Leioscyphus*, the leaves are said to be *opposite* and the underleaves *bifid*. The first distinction, however, does not hold, as there are acknowledged species of *Leioscyphus* (e. g., *L. chiloscypchoideus*) with alternate leaves; and the second distinction seems hardly sufficient to separate the genera.

42. MYLIA CHILOSCYPHOIDEA (Lindenb.).

Plagiochila chiloscypchoidea Lindenb. in Lehmann, Pugillus, **8**:
4. 1844.

Leioscyphus chiloscypchoideus Mitt. Fl. Tasmaniae, **2**: 225.
1860.

Feugia.

43. PIGAFETTOA CRENULATA Massal. Nuovo Gior. Bot. Ital. **17**:
237. pl. 21. f. 23. 1885.

Villarina Bay.

* Mitten, Botany of Kerguelen Island: Transit of Venus Expedition, pl. 3. f. 6.
1874. Schiffner and Gottsche, Lebermoose der Forschungsreise S. M. S. "Gazelle,"
pl. 3. f. 4, 5. 1890.

† Engler & Prantl, Nat. Pfl. Fam. **13**: 89, 90. 1893.

44. *PLAGIOCHILA ANSATA* Hook. f. & Tayl. in G. L. & N. Syn. Hep. 649. 1847. [Plate 347.]

Jungermannia ansata Hook. f. & Tayl. Lond. Jour. Bot. 3 : 457. 1844.

Plagiochila circinalis var. Besch. & Massal. Bull. Soc. Linn. de Paris, 627. 1886.

Dioicous : plants growing in loose tufts, blackish-brown varying to pale brown or yellowish-green : stems simple or sparingly branched, sometimes innovating from below the perianth, slightly or not at all radiculose : leaves distant or subimbricated, erect-spreading or erect and appressed to the stem, orbicular-obovate, rounded at the broad apex, cuneate at the base, margin entire or repand, the antical decurrent, the postical rounded near the base and less decurrent : underleaves wanting : leaf-cells polygonal (mostly 6-sided), becoming elongated toward base, trigones very conspicuous, separated by narrow thin-walled regions or pits : ♀ inflorescence terminal, the bracts in 2 or 3 pairs, passing by gradual transitions into the stem-leaves, the margins coarsely and irregularly dentate with 1-5 sharp teeth or blunt projections, innermost bracts narrower than the others, ovate or obovate in shape ; perianth long-exserted, flattened, exalate, clavate, very gradually narrowed toward the base and truncate at the apex, mouth bilabiate, ciliate-dentate, perianth 2 cells thick except close to the base where it is 3 cells and near the mouth where it is only one cell.

Stem 5 cm. or more long, 0.25 mm. in diameter ; leaves 1.5 mm. long, 1.4 mm. wide ; leaf-cells on edge of leaf $25\ \mu$, in the middle $29\ \mu$ and at the base $53\ \mu \times 29\ \mu$; bracts of innermost row 1.5 mm. \times 0.95 mm. and 1.7 mm. \times 1.35 mm., perianth 4 mm. long, 1.2 mm. wide.

Villarina Bay.

Plagiochila ansata is a species of wide distribution in southern regions, having been reported also from the Falkland Islands and from New Zealand. The type specimens from the first of these localities agree closely with the Fuegian plants ; but, as the published descriptions and figures of the species are somewhat inadequate, it has seemed advisable to describe and figure it anew. The description given above is drawn from robust stems, particularly those bearing perianths ; sterile stems and the branches and innovations of fertile plants are sometimes much more slender and bear scattered and smaller leaves. Even in the most slender forms, however, the characteristic leaf-cells with their well-developed

trigones are retained. Judging from the description, the specimens doubtfully referred by Beschereille and Massalongo to *Plagiochila circinalis* belong here. Herr Stephani has kindly sent me a specimen of the last-named species from Australia; and, although it is certainly a near ally of *P. ansata*, it differs from it in the following points: the plants are more robust, the leaves are densely imbricated and their antical margins spread out from the stem and are strongly revolute throughout nearly their whole length, the leaf-cells are scarcely, if at all, elongated at the base, their trigones are even more conspicuous, they are oval or circular in outline and are very frequently confluent.

45. *PLAGIOCHILA BISPINOSA* Lindenb. Ann. Sci. Nat. IV. 8: 326.
pl. 11. f. 7-13. 1858.

Villarina Bay.

46. *PLAGIOCHILA DURICAULIS* Hook. f. & Tayl. in G. L. & N.
 Syn. Hep. 641. 1847.

Jungermannia duricaulis Hook. f. & Tayl. Lond. Jour. Bot. 3:
 458. 1844.
 Fuegia.

47. *PORELLA FOETENS* (De Not.) Trevis. Mem. reale Ist. Lomb. di
 Sci. e Lett. III. 4: 407. 1877.

Madotheca foetens De Not. Mem. Acc. Tor. II. 16: 231. f.
 17. 1855.
 Villarina Bay.

48. *RADULA FLAVIFOLIA* Tayl. in G. L. & N. Syn. Hep. 259.
 1845.

Jungermannia flavifolia Hook. f. & Tayl. Lond. Jour. Bot. 3:
 476. 1844.
 Fuegia.

49. *SCHISTOCHILA GAYANA* (Gottsche) var. *MASSALONGOANA* (Schiffn.
 & Gottsche).

Gottschea Gayana var. Massal. Nuovo Gior. Bot. Ital. 17:
 205. *pl. 12. f. 2.* 1885.

Gottschea Gayana var. *Massalongoana* Schiffn. & Gottsche,
Lebermoose der Forschungsreise S. M. S. "Gazelle," 2. 1890.
Villarina Bay.

50. SCHISTOCHILA LAMELLATA (Hook.) Dum. Recueil d'obs. sur les
Jung. 15. 1835.

Jungermannia lamellata Hook. Musc. Exot. pl. 49. 1818.

Gottschea lamellata Nees in G. L. & N. Syn. Hep. 20. 1844.
Villarina Bay.

51. SCHISTOCHILA LAMINIGERA (Hook. f. & Tayl.) Evans, Contr.
U. S. Nat. Herb. 1: 141. 1892.

Jungermannia laminigera Hook. f. & Tayl. Lond. Journ. Bot.
3: 456. 1844.

Gottschea laminigera Tayl. in G. L. & N. Syn. Hep. 623.
1846.

Fuegia.

52. TRICHOCOLEA TOMENTOSA (Swartz) Gottsche in G. & R. Hep.
Eur. Exs. no. 272.

Jungermannia tomentosa Swartz, Prod. Fl. Ind. occ. 145. 1788.

Jungermannia tomentella var. *tomentosa* Lindenb. Hep. Eur.
19. 1829.

Trichocolea tomentella var. *tomentosa* G. L. & N. Syn. Hep.
237. 1844.

Leiomitra tomentosa Lindb. Acta Soc. Sci. Fenn. 10: 515.
1875.

Basichiton tomentosum Trevis. Mem. reale Ist. Lomb. di Sci.
e Lett. III. 4: 394. 1877.

Fuegia.

53. TYLIMANTHUS ANDERSSONII (Ångstr.). [Plate 348.]

Jungermannia tenella Ångstr. Öfversigt af Kongl. Vetensk.
Akad. Förhand. 29, Häft 4: 11. 1872. (Not Hook f. & Tayl.).

Gymnanthe Anderssonii Ångstr. l. c. 33, Häft 4: 50. 1876.

Dioicous: growing in loose tufts or mixed with other hepaticae,
pale or whitish-green: plants consisting of a prostrate caudex giving
rise to ascending or erect stems: caudex radiculose, usually
bearing scattered rudimentary leaves: stems without rhizoids or

with a few scattered ones close to the caudex, simple or sparingly branched, sometimes giving off radiculose stolons from the lower part; stem-leaves distant and rudimentary below, more or less imbricated and larger above, obliquely inserted, somewhat concave, obovate-orbicular from a narrowed base, antical margin decurrent, straight or slightly curved, entire, postical margin reaching nearly to middle of stem, slightly or not at all decurrent, entire, sinuate, or with a few scattered teeth, apex broad and variable, sometimes distinctly emarginate-bilobed, with acute, obtuse or rounded lobes, sometimes truncate, entire or sparingly and irregularly dentate with blunt teeth; underleaves wanting; leaf-cells thin-walled with small but distinct trigones, somewhat elongated toward base, cuticle smooth: ♀ inflorescence terminal on short ascending stems or elongated branches; bracts crowded, similar to the leaves, but even more irregular in shape, sometimes unequally 2-lobed, the innermost narrower and more delicate than the others and sometimes more conspicuously toothed, sac tapering to a blunt point, radiculose: ♂ inflorescence borne in the course of ascending stems, bracts in about five pairs, imbricated, strongly saccate below, but with spreading apices above, broadly orbicular when explanate, truncate or emarginate-bifid, the postical lobe being the larger.

Stems 1.5–3 cm. long, 0.35 mm. in diameter; leaves 1.7 mm. long, 1.85 mm. broad; leaf-cells at base 58 μ long, 29 μ broad, in other parts of the leaf 29 μ in diameter; outer perichaetial bracts 1.9 mm. long and broad, sac 2.7 mm. long, 1 mm. in diameter; perigonal bracts 1 mm. long, 1.45 mm. wide. The foregoing measurements may be considered representative of this very variable species.

Lapotaia.

In its pale color and in the shape and areolation of its leaves, the present plant strongly resembles *Marsupidium Urvilleanum*, which is a more robust species with its leaves more strongly dentate and inflexed on their antical margins. As far as can be judged from descriptions, the two species differ from each other in the position of the ♀ inflorescence and pendant sac, necessitating their separation into distinct genera. In *Marsupidium Urvilleanum*, this sac is described by Mitten* as "attached to the lower part of the stem by its side;" in the closely related (if not identical) *M. Brecknockiense* (Massal.) Besch. and Massal., its author† says: "perichaetia ad ramorum basim et in ramulo brevissimo sublaterali

* Handb. N. Zeal. Fl. 754. 1867.

† Nuovo Gior. Bot. Ital. 17: 214. 1885.

radicante posita"; in the species described above, on the contrary, the sac is clearly terminal on ascending stems or elongated branches, showing that the plant is a *Tylimanthus*. The sac moreover has the same structure as that ascribed to this genus—its wall is closely adherent to the calyptra and it bears a cluster of unfertilized archegonia at its mouth. At my request Professor Nathorst has kindly sent me some of the original specimens of *Gymnanthe Anderssonii* as determined by Ångström. So far as can be decided from sterile plants, these belong to the same species as Dr. Hatcher's specimens, although in some of them the leaves are a little more toothed.

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Explanation of Plates.

PLATE 345. *Blepharostoma pilosum* Evans. 1. Plants, natural size. 2. Part of stem, antical view ($\times 32$). 3. Leaf ($\times 32$). 4. Leaf subtending branch ($\times 32$). 5. Underleaf ($\times 32$). 6. Cells from middle of leaf ($\times 290$). *Blepharostoma quadripartitum* (Hook.) Trevis. 7. Leaf ($\times 32$). 8. Perichaetial bract ($\times 32$).

PLATE 346. *Jungermannia Hatcheri* Evans. 1. Plant, natural size. 2. Part of gemmiparous stem, antical view ($\times 16$). 3, 4. Leaves ($\times 16$). 5, 6. Underleaves ($\times 28$). 7. Cells from middle of leaf ($\times 255$). *Jungermannia propagulifera* Gottsche. 8. Plants, natural size. 9. Part of stem with ♂ and ♀ inflorescence, antical view ($\times 16$). 10. Part of stem with perianth, antical view ($\times 16$). 11. Leaf ($\times 16$). 12. Cells from middle of leaf ($\times 255$). 13, 14. Innermost perichaetial bracts, 13 with connate bracteole ($\times 16$). 15. Bract of next outer row ($\times 16$). 16, 17. Perigonal bracts ($\times 16$); 13–17 from one inflorescence. 18. Innermost perichaetial bracts with connate bracteole between them, from another inflorescence ($\times 16$).

PLATE 347. *Plagiochila ansata* Hook. f. & Tayl. 1. Plants, natural size. 2. Part of stem with perianth, lateral view ($\times 15$). 3. Part of sterile stem, lateral view ($\times 15$). 4. Cells from middle of leaf ($\times 290$). 5, 6, 7. Bracts, in regular order from perianth ($\times 15$). 8. Transverse section of perianth ($\times 18$). 9. Teeth from mouth of perianth ($\times 290$).

PLATE 348. *Tylimanthus Anderssonii* (Ångstr.) Evans. 1. Plants, natural size. 2. Sterile stem, postical view ($\times 12$). 3. Female stem with two young sacs ($\times 12$). 4. Female stem with mature sac ($\times 12$). 5. Male stem, antical view ($\times 12$). 6. Cells from middle of leaf ($\times 220$). 7, 8, 9. Perichaetial bracts ($\times 12$). 10. Perigonal bract ($\times 14$).